

A NEW SPECIES OF *CLADOCARPUS*
(CNIDARIA: HYDROIDA: PLUMULARIIDAE)
FROM THE STRAITS OF FLORIDA

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Abstract.—*Cladocarpus delicatus*, a new species of plumulariid hydroid, is described, bringing to nine the number of species of *Cladocarpus* known from the Straits of Florida. The delicate appearance of the colony and spike-like projection from the medial abcauline wall of the hydrotheca distinguishes *C. delicatus* from other species of this genus. A key to the species of *Cladocarpus* known from the tropical western Atlantic is provided.

In May 1962, the staff of the Institute of Marine Sciences [now the Rosenstiel School of Marine and Atmospheric Sciences (RSMAS)] of the University of Miami began a faunal survey of the Straits of Florida and its approaches. During the course of the project, conducted intermittently over a 10-year period, a large number of thecate hydroids was collected, including many members of the family Plumulariidae. In this collection a new plumulariid species, *Cladocarpus delicatus*, belonging to the subfamily Aglaopheniinae was discovered. The holotype is described and illustrated in this paper. An unpublished account of the species appears elsewhere (Bogle 1975).

The holotype of *Cladocarpus delicatus* is deposited in the collections of the National Museum of Natural History, Smithsonian Institution (USNM). The paratype is located in the invertebrate museum of the Rosenstiel School of Marine and Atmospheric Sciences.

Subfamily Aglaopheniinae Stechow, 1911
Genus *Cladocarpus* Allman, 1874
Cladocarpus delicatus, new species
(Figs. 1–3)

Material examined.—Material in the USNM: Holotype, USNM 60212, 1 colony, R/V *Gerda* Sta. G-237, Straits of Florida

(25°15'N, 79°14'W–25°17'N, 79°14'W), 393–397 m, 30 Jan 1964. Colony with phylactogonia and gonothecae present (Table 1); 18 mm high.

Material at RSMAS: Paratype, UMMML 5: 151, one colony, R/V *Gerda* Sta. G-239, Straits of Florida (25°20'N, 79°15'W–25°22'N, 79°16'W), 256–348 m, 30 Jan 1964. Fragments of colony with phylactogonia and gonothecae present.

Description.—Trophosome: Holotype colony with unbranched hydrocaulus, attaining a height of 18 mm; anchored in the substrate by a tangle of rhizoidal filaments. Hydrocaulus slender and nonfascicled, carrying hydrocladia along the distal half. Hydrocauline nodes indistinct. Three very strong, oblique, hydrocauline constrictions just proximal to the first hydrocladium with one nematotheca present between successive constrictions. Proximal half of hydrocaulus with a single longitudinal row of nematothecae along the anterior face. Anterior face of distal half of hydrocaulus with two tubular nematothecae between successive hydrocladia, one in the axil of the apophysis and the other proximal to it.

Unmodified hydrocladia arranged alternately, few in number and distant (~0.75 mm apart); divided into long (~1 mm), sinuous, often weakly delineated internodes. Distal fourth of each internode arched

Table 1.—Measurements of nematothecae and hydrothecae of the holotype of *Cladocarpus delicatus*.

| Measurements (in micrometers) | Range (mean) | Number* |
|--|-----------------|---------|
| Distance from apex of supracalycine nematotheca to apex of preceding supracalycine nematotheca | 966–1092 (1016) | 10 |
| Hydrotheca, total depth | 522–605 (574) | 11 |
| Maximum diameter | 231–314 (298) | 11 |
| Diameter at margin | 138–176 (162) | 11 |
| Mesial nematotheca, total length | 132–165 (151) | 11 |
| Supracalycine nematotheca, total length | 143–176 (164) | 11 |
| Length above hydrothecal margin | 33–60 (44) | 11 |
| Gonotheca, length | 396–418 (411) | 2 |
| Width | 170–226 (209) | 2 |

* Number of measurements made.

slightly over the hydrotheca of that internode.

Hydrothecae distant, located approximately midway along each hydrocladial internode. Each hydrotheca narrow at the proximal end, greatly inflated toward the middle and narrowing again slightly near the hydrothecal margin. Medial abcauline wall noticeably thickened and often protruding out and upward so as to form a spike-like projection originating approximately two-thirds up the hydrothecal face. Length of spike as much as 0.1 mm. Projection usually with a small cavity formed by the continuation of the hydrothecal cavity into it but without a terminal aperture. Hydrothecal margin with a single large medial tooth and 4 to 5 smaller lateral teeth on each side. Strong, posterior intrathecal ridge extending obliquely upward across one-third to one-half of both lateral faces of the hydrotheca. Number of internodal septa opposite hydrotheca usually 2, occasionally 3. Septa very short and weak; located proximal to the posterior intrathecal ridge. No other septa regularly present per internode except one at the base of the mesial nematotheca.

A single long, tubular mesial nematotheca springing from the hydrocladium as much as 100 μ m below the base of the hydrotheca. Mesial nematotheca with an aperture run-

ning from the top to midway along the free upper surface.

A pair of long, tubular supracalycine nematothecae projecting obliquely outward and upward from their hydrocladial origin; slightly geniculate near their distal end.

Gonosome: Gonothecae narrow, lengthened, obovate sacs arising in small clusters near the base of the apophyses of unmodified and modified hydrocladia that bear phylactogonia. Gonothecae with oval terminal aperture.

Phylactogonia arising from the most distal hydrocladia, each of which is usually modified into a short, nematophorous spike bearing no hydrotheca. A single phylactogonium arises from an area lateral to the proximal nematothecae of each of these hydrocladia and arches medially over the front of the hydrocaulus, thus protecting the gonangia borne there. Phylactogonium usually composed of 3 to 4 very slender nematophorous branchlets formed by the bifurcation of alternate branchlets, with the entire structure resembling stag antlers. Phylactogonial nematothecae long and tubular, directed outward and upward away from the gonangia.

Etymology.—*Delicatus* (Latin) = delicate, alluding to the delicate appearance of the colony.

Geographic range.—*Cladocarpus delica-*

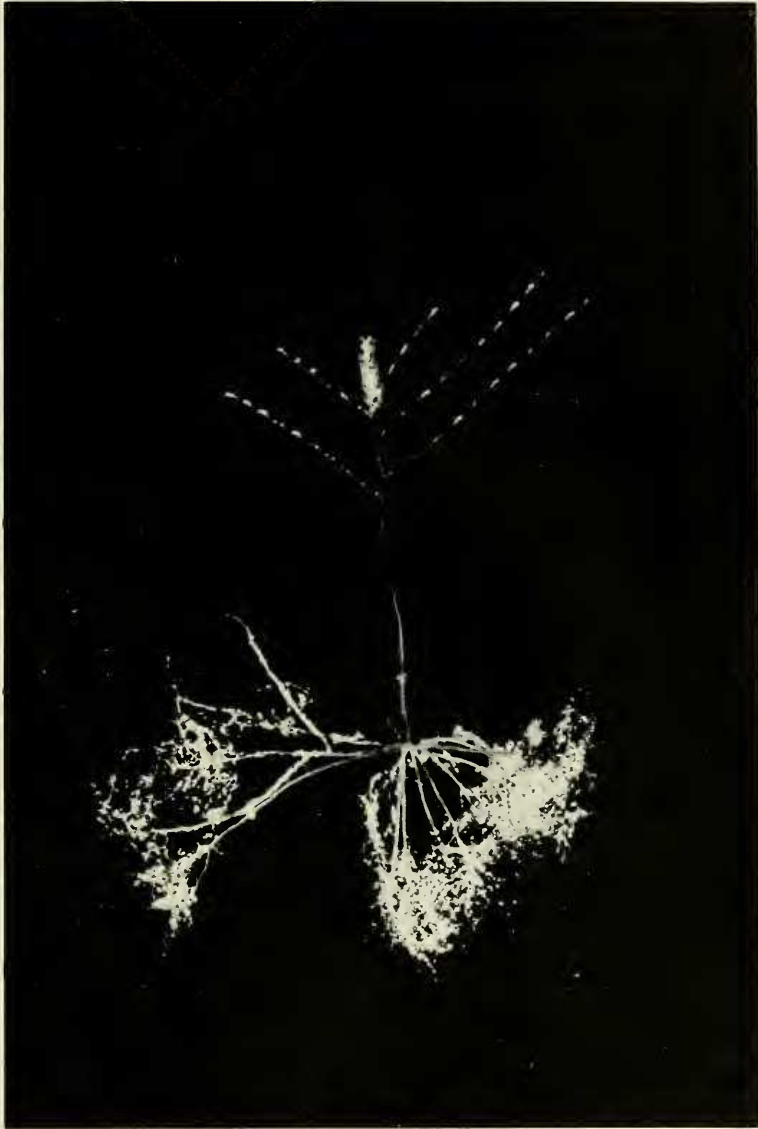


Fig. 1. *Cladocarpus delicatus*, new species: Holotype colony, USNM 60212, 18 mm high.

tus is known only from the northern Straits of Florida.

Discussion.—This small delicate hydroid closely resembles in size and in the general form of the trophosome and gonosome two other species of *Cladocarpus* reported from the Straits of Florida. They are *C. dolichotheca* Allman, 1977, and *C. tenuis* Clarke,

1879. The distinctive hydrotheca of *C. delicatus* with its inflated appearance and its unusual spine-like projection from the abcauline wall, however, readily distinguishes it from either *C. dolichotheca* or *C. tenuis* as well as from other members of the genus *Cladocarpus*. This new hydroid brings to nine the number of species of *Cladocarpus*

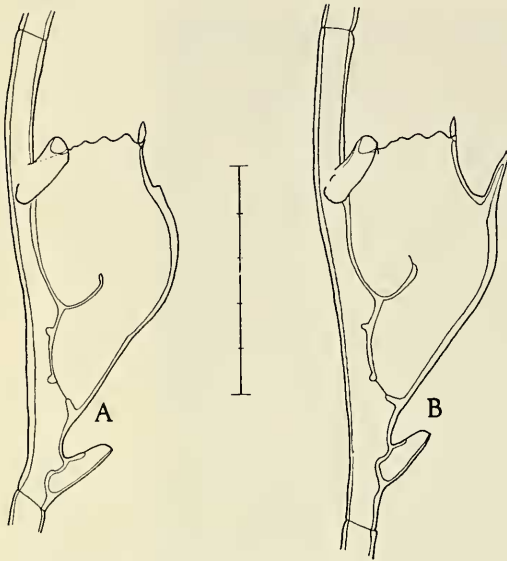


Fig. 2. *Cladocarpus delicatus*, new species: A, Hydrotheca of holotype, lateral view, USNM 60212 (northern Straits of Florida), scale 0.5 mm; B, Hydrotheca of holotype, lateral view showing spike-like projection from medial abcauline wall, USNM 60212 (northern Straits of Florida), scale 0.5 mm.

reported from the Straits of Florida and its approaches and to thirteen the number known from the tropical western Atlantic. Currently, approximately 60 species are assigned to the genus *Cladocarpus* (see Millard 1975, Rees & Vervoort 1987, Vervoort 1966) though several are questionably included in the genus since no gonosome has been described. The following key is to assist in the identification of species of *Cladocarpus* known from the tropical western Atlantic. Those species of *Cladocarpus* reported from the Straits of Florida and its approaches and treated in detail by the author (Bogle 1975) are indicated in the key with an “*”.

A Key to the Tropical Western Atlantic Species of *Cladocarpus*

- 1a. Hydrothecal margin entire
 *C. carinatus* Nutting, 1900*

- 1b. One or more teeth on hydrothecal margin 2
- 2a. Hydrothecal margin with 1 or 2 prominent median teeth; others, if present, low 3
- 2b. Hydrothecal margin with several subequal teeth; none prominent 11
- 3a. Hydrothecal margin with 1 prominent median tooth 4
- 3b. Hydrothecal margin with 2 prominent median teeth 12
- 4a. Posterior (adcauline) intrathecal ridge absent 5
- 4b. Posterior (adcauline) intrathecal ridge present 7
- 5a. Hydrotheca obconic (like an inverted cone); face of hydrotheca straight . . *C. flexuosus* Nutting, 1900
- 5b. Hydrotheca long and slender, not cone-like; anterior profile of hydrotheca concave 6
- 6a. Anterior profile of hydrotheca weakly concave; hydrotheca not appreciably narrowed (ratio of lateral width of hydrotheca at its midpoint to the length approximately 1:4)
 *C. dolichotheca* Allman, 1877*
- 6b. Anterior profile of hydrotheca strongly concave; lateral and frontal aspect of hydrotheca appreciably narrowed (ratio of lateral width of hydrotheca at its midpoint to the length approximately 1:6) *C. tenuis* Clarke, 1879*
- 7a. Hydrocaulus fascicled
 *C. longipinna* Fraser, 1945
- 7b. Hydrocaulus nonfascicled 8
- 8a. Intrathecal ridge present but short and weak; anterior (abcauline) profile of hydrotheca slightly convex *C. flexilis* Verrill, 1885
- 8b. Intrathecal ridge short but strong; anterior (abcauline) profile of hydrotheca convex or sinuous . . . 9
- 9a. Hydrocladial internode with no

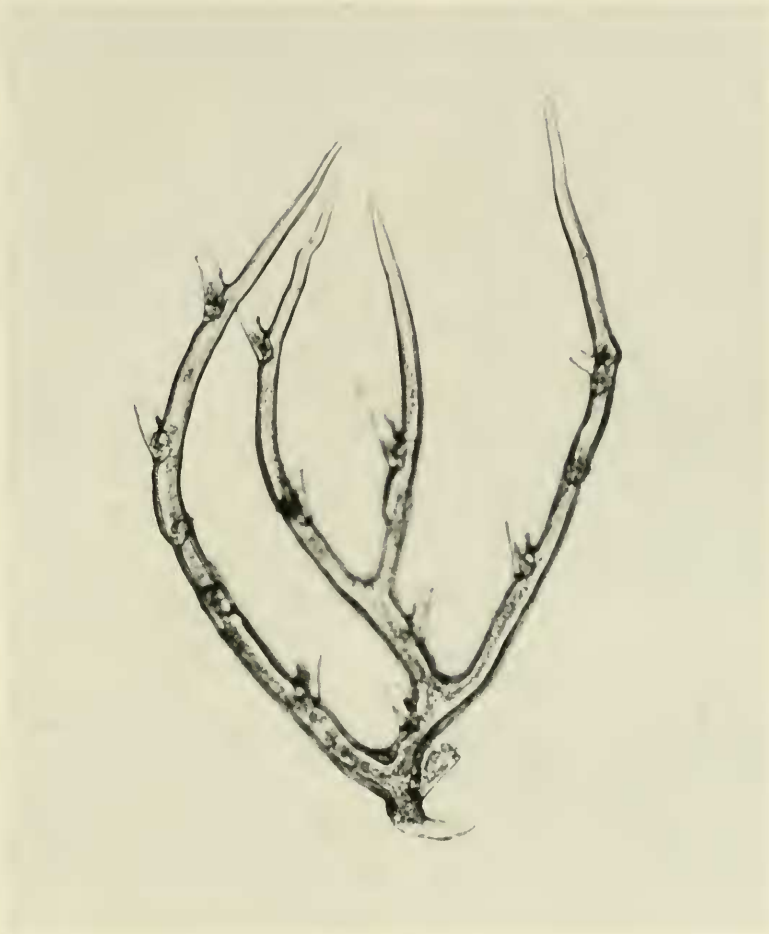


Fig. 3. *Cladocarpus delicatus*, new species: Phylactogonium of paratype, UMML 5:151 (northern Straits of Florida), height 1.3 mm.

- more than 3 septa; mesial nematotheca not adnate to the hydrotheca but arising as much as 100 μm below the base of the hydrotheca *C. delicatus*, new species*
- 9b. Hydrocladial internode with 5 or more septa; mesial nematotheca adnate to or arising just below the base of the hydrotheca 10
- 10a. Anterior (abcauline) profile of hydrotheca sinuous
 *C. ventricosus* Allman, 1877*
- 10b. Anterior (abcauline) profile of hydrotheca convex
 *C. obliquus* Nutting, 1900*
- 11a. Hydrotheca with a conspicuous, sigmoid, posterior intrathecal ridge extending to anterior (abcauline) face
 *C. sigma* (Allman, 1877)*
- 11b. Hydrotheca with a very short and straight posterior intrathecal ridge
 *C. compressus* Fewkes, 1881
- 12a. Hydrotheca deep with 3 or more internodal septa opposite it; supracalyceine nematothecae with

- strong posterior constriction; nematothecal margin not noticeably serrate
 *C. paradiseus* Allman, 1877*
- 12b. Hydrotheca relatively short and squat with usually only 1 or 2 internodal septa opposite it; supracalycine nematothecae lacking a strong posterior constriction and with a finely serrated margin . . . *C. grandis* Nutting, 1900*

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